Pretty Lake

LaGrange County

Supplemental Walleye Evaluation

Date of Survey: September 23, 2008

Biologist: Neil D. Ledet, District 2 Fisheries Biologist

Objective: The objective of this survey was to evaluate survival of walleye that are annually stocked into Pretty Lake, especially initial survival of advance walleye fingerlings stocked in the fall of 2007, in accordance with work plan 300FW1F10D40617.

Methods: Fish collection effort consisted of 1.5 hours of pulsed D.C. nighttime electrofishing. Only walleye were collected. Two dip netters were used and approximately 95% of the shoreline was covered. Walleye were measured to the nearest 0.1 in TL and weights were taken to the nearest 0.01 pound.

Summary: The Pretty Lake Conservation Club began stocking walleye into Pretty Lake in the mid 1980's. The first Indiana Division of Fish and Wildlife (DFW) walleye stocking into Pretty Lake occurred in 1990 (Table 1). Walleye were stocked again in 1993 by the DFW and stockings have continued annually through 2007. These 1 to 2-in TL June walleye fingerlings were stocked at a rate of approximately 100 per acre according to state guidelines. To date, the DFW has stocked 312,070 June walleye fingerlings into Pretty Lake.

Pretty Lake was also stocked with 2,280 advanced fall walleye fingerlings in October 2007 in addition to the standard June stocking. These fish averaged 8.9 in TL and were stocked at a rate of 12.4 per acre. They were produced at the Fawn River State Fish Hatchery during an experimental rearing project. Considering the relatively poor survival from June fingerlings in recent years, including the failed 2007 stocking, its zebra mussel status and the number of fall fish available, Pretty Lake was selected to utilize these bonus fish.

Forty-seven walleyes were collected during the September 23, 2008 survey. Forty-six of these were age-1 fish from the 2007 advanced walleye stocking and one was an age-2 fish. Age-1 walleyes were collected at a rate of 30.7 per electrofishing hour, 2.5 times higher than the catch rate of age-1 walleye in 1994, which was previously the highest rate and 12 times higher than the average rate recorded at Pretty Lake (Table 2). The 2008 age-1 catch rate from Pretty Lake was also the third highest observed of all electrofishing surveys conducted on northern Indiana lakes to evaluate initial survival of advanced walleyes (Appendix 1). The average electrofishing catch per hour for age-1 advanced fall stocked walleye was 11.5 at Crooked Lake, 11.6 at Winona and 22.0 from Sylvan. The present statewide criterion for walleye stocking success is a catch rate of 4.2 age-1 walleyes per electrofishing hour. Age-0 walleyes were absent from the sample as no walleyes were stocked into Pretty Lake in 2008. On the night of the survey, the water temperature was 72° F.

Age-1 walleyes collected ranged in length from 10.1 to 14.0 in TL and averaged 11.8 in TL (Table 3). This is the widest length ranged observed at Pretty Lake to date and likely a reflection of the size range at stocking (6.4 to 11.5 in TL). The average length of age-1 walleyes collected in 2008 is also the smallest observed at Pretty Lake to date. Walleye growth at Pretty Lake has been historically good. However, the exceptional survival from the 2007 advance fingerlings may have pushed the yellow perch and sunfish forage toward its limit. The average length for the 67 age-1 walleye collected from Pretty Lake since 1994 is 13.6 in TL. Weights for the Pretty Lake age-1 walleye collected in 2008 ranged from 0.31 to 0.86 pounds averaging 0.50 pounds.

Division of Fish and Wildlife (DFW) biologists have conducted 16 fall surveys at Pretty Lake to evaluate the June fingerling walleye stockings. A total of 27.24 hours of electrofishing were conducted during these surveys. This sampling effort produced 141 age-0, 67 age-1, 33 age-2 and 52 age-3 or older walleyes with average catch rates of 5.2, 2.5, 1.2 and 1.9 fish per hour respectively.

Based on the minimum fall catch rate of seven age-0 walleye per nighttime electrofishing hour, 4 of the 16 DFW June walleye stockings met the statewide criteria for success. Five walleye stockings were successful if you include the 1999 survey where 6.7 age-0 walleye were collected

per hour. Of the June walleye stockings, the 1993 stocking was the most successful followed by the 1998, 1994, 2001 and 1999 stockings. During the 1993 fall survey, 20.5 age-0 walleyes were collected per electrofishing hour. During the 1994 and 1995 fall surveys, age-1 and age-2 walleye from this year class were collected at a rate of 12.0 and 4.5 fish per hour respectively.

At Pretty Lake, one or two successful stockings every three or four years have provided good fishing opportunities for walleye. For example, following successful stockings in 1993 and 1994, anglers harvested 150 walleyes weighing 270 pounds during the 1996 angler creel survey on Pretty Lake. Eleven percent of the 1996 Pretty Lake anglers were fishing specifically for walleye while an additional 8% indicated they were fishing for walleye in combination with another species (Koza 1996). Based on the criteria for success for harvest and interest as outlined in Walleye Management in Indiana, (Andrews 1994) the Pretty Lake walleye program in 1996 was successful.

Similar survival patterns of stocked June walleye fingerlings have been seen at other northern Indiana natural lakes. Walleye stockings during the initial few seasons were generally successful and developed a fishery. This early success was often followed by 1 to 3 years of poor or failed survival with a successful stocking often occurring in the next year. Although less pronounced, this survival pattern has also been seen in advanced fall fingerling stockings at Winona Lake (2003-2005) and to a lesser degree Crooked Lake. Although stocking advanced walleye fingerlings has been more consistent in establishing strong year classes, it should not be surprising to see a weak or poor year class immediately following an extremely successful stocking of advanced fall fingerlings.

Walleye recruitment in naturally reproducing populations can be very erratic, influenced by predation, including cannibalism from adult walleye, weather, forage, water quality, and harvest. These factors are also capable of influencing the survival of stocked fish. Managing each walleye lake in Indiana on a lake by lake basis, taking into account the above factors, would be difficult and time consuming. However, the inconsistent success of the annual walleye stockings at Pretty Lake merits consideration of a change in stocking strategy. The DFW should experiment with stocking advanced fall fingerling walleyes into Pretty Lake in alternate years.

In addition, while we can't control factors like the weather, forage production or predation, we can influence harvest. The DFW should continue to monitor our walleye populations and explore the impacts of size and bag limits on population structure. Increasing the minimum walleye size limit and reducing the daily bag limit should protect these expensive hatchery fish through their second summer in the lake and could level out the boom and bust cycle observed in some of these fisheries.

Recommendations:

1. Advance walleye should be stocked into Pretty Lake in alternate years at a rate of 10 per acre.

2. The DFW should continue to annually evaluate survival of fall stocked walleyes.

Literature Cited:

Andrews, S., Committee Chairman 1994. Walleye management in Indiana. Committee Report. Indiana Division of Fish and Wildlife. Indianapolis, Indiana. 39 pp.

Koza, Larry A., 1996. A survey of the Pretty Lake fish population and fish harvest. Orland, Indiana. 38 pp.

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Date: 1/23/09

Table 1. Division of Fish and Wildlife walleye stocking, sampling effort and catch at Pretty Lake, LaGrange County, 1990 through 2008.

Date Stocked	No. Per Pound	Ave. Length	Number Stocked	Stocking Density	Gear	Effort	Sample Date	Total Collected	Walleye collected per electrofishing hour or net lift				
									Age 0	Age 1	Age 2	Age 3+	Total
6/90	766	1.9	18388	100	DC	2	10/90	6	0	0	0	3.0	3.0
6/93	625	2	17350	94	DC	2	10/93	41	20.5	0	0	0	20.5
6/94	1028	1.6	19354	105	DC	2	10/94	45	9.5	12.0	0	1.0	22.5
6/95	640	1.9	20970	114	DC	2	10/95	27	5.0	3.0	4.5	1.0	13.5
6/96	711	1.7	19900	108	DC	8	5/96	80	0	1.1	4.5	4.4	10.0
6/96					GN	9	6/96	25	0	0.1	1.2	1.4	2.8
6/96					DC	1	6/96	6	0	2.0	2.0	2	6.0
6/96					DC	2	9/96	14	2.0	2.0	2.5	0.5	7.0
6/97	832	1.7	19136	104	DC	1.5	10/97	5	0	1.3	1.3	0.7	3.3
6/98	1131	1.5	18427	100	DC	1.5	10/98	32	16.0	0	2.7	2.7	21.3
6/99	824	1.8	20595	112	DC	1.5	10/99	26	6.7	6.7	1.3	2.7	17.3
5/00	2685	1	18795	102	DC	1.75	10/00	15	0	4.6	2.9	29	8.6
5/01	747	1.7	18675	101	DC	1.75	10/01	20	7.4	0	1.1	2.9	11.4
5/02	1520	1.4	17900	97	DC	1.5	10/02	8	0.7	1.3	2.0	1.3	5.3
5/03	794	1.7	18641	101	DC	1.75	10/03	13	5.1	0.6	0.6	1.1	7.4
5/04	1006	1.5	18400	100	DC	1.66	10/04	19	0.6	4.8	1.8	4.2	11.4
6/05	947	1.6	21781	118	DC	1.58	10/05	7	0	0	0	4.4	4.4
6/06	1,142	1.5	22,948	125	DC	1.25	9/06	9	5.6	0	0	1.6	7.2
6/07	1,479	1.4	20,810	113	DC	1.5	9/07	4	0	1.3	0	1.3	2.7
10/07	4.58	8.9	2,280	12.4	DC	1.5	9/08	47	0	30.7	0.7	0	0

DC-nighttime electrofishing
GN-standard experimental gill net

Table 2. Fall nighttime DC electrofishing catch rates by age for walleye collected from Pretty Lake, LaGrange County 1990 through 2008.

Year	# Stocked	EF Effort (hours)	# Age 0/hr	# Age 1/hr	# Age 2/hr	# Age 3 & older/hr
1990	18,388	2.0	0	0	0	3.0
1993	17,350	2.0	**20.5**	0	0	0
1994	19,354	2.0	**9.5**	**12.0**	0	1.0
1995	20,970	2.0	5.0	**3.0**	**4.5**	1.0
1996	19,900	2.0	2.0	2.0	**2.5**	0.5
1997	19,136	1.5	0	1.3	1.3	0.7
1998	18,427	1.5	**16.0**	0	2.7	2.7
1999	20,595	1.5	**6.7**	**6.7**	1.3	2.7
2000	18,795	1.75	0	**4.6**	**1.1**	2.9
2001	18,675	1.75	**7.4**	0	**1.1**	2.9
2002	17,900	1.5	0.7	**1.3**	2.0	1.3
2003	18,641	1.75	5.1	0.6	**0.6**	1.1
2004	18,400	1.66	0.6	4.8	1.8	4.2
2005	21,781	1.58	0	0	0	4.4
2006	22,948	1.25	5.6	0	0	1.6
2007	20,810	1.5	0	1.3	0	1.3
2007	2,280*					
2008	None	1.5	N/A	30.7	0.7	0

*These advanced fall fingerlings ranged from 6.4 to 11.5 in TL and averaged 8.9 inches at stocking.

Table 3. Number, length range and average length in inches of walleye collected during fall nighttime D.C. electrofishing from Pretty Lake, LaGrange County, 1990 through 2008.

	Age 0			Age 1			Age 2		
Year	Number Collected	Length Range in.	Average Length in.	Number Collected	Length Range in.	Average Length in.	Number Collected	Length Range in.	Average Length in.
1990	0			0			0		
1993	41	7.2 - 9.1	8.2	0			0		
1994	19	7.0 - 9.5	8.9	24	12.4 - 14.5	13.8	0		
1995	10	7.5 - 8.5	8.1	6	11.5 - 12.5	12.1	9	14.8 - 15.9	15.4
1996	4	8.2 - 9.2	8.8	4	12.9 - 14.2	13.6	5	16.2 - 17.8	17.2
1997	0			2	12.9 - 13.1	13.0	2	15.0 -16.9	16.0
1998	24	8.5 - 10.5	8.3	0			4	15.5 - 16.5	16.1
1999	10	8.6 - 10.6	9.5	10	13.4 - 15.4	14.2	2	16.2 - 16.3	16.3
2000	0			8	12.0 - 14.5	13.8	2	16.6 - 16.7	16.7
2001	13	8.9 -10.8	9.6	0			2	16.2 - 16.3	16.3
2002	1		10.4	2	13.3 - 13.5	13.4	3	14.0 - 15.0	14.7
2003	9	8.7 - 10.3	9.6	1		12.2	1		16.3
2004	1		9.4	8	11.6 - 14.9	13.8	3	16.2 - 17.1	16.5
2005	0			0			0		
2006	9	8.1 - 9.5	8.7	0			0		
2007	0			2	14.7 - 14.9	14.8	0		
2008	0			46	10.1 – 14.0	11.1	1	15.9	15.9
Totals	141		8.7	113		12.6	33		16.1

Appendix 1. Advanced fall walleye stocked into Big Turkey, Crooked, Pretty, Simonton, Sylvan, Wall and Winona lakes and number of age 1 walleye collected per nighttime DC electrofishing hour, 2000 through 2007.

Lake / Year	Date Stocked	# Stocked	# Stocked Per Acre	Average Size/range (Inches)	# of Age 1 Walleye Collect Per Electrofishing Hour	Fall Sampled
Big Turkey (450 ac)						
2002	10/20	2,000	4.4	5 -7	0.5	2003
2003	11/01	2,100	4.7	5 -8	3.5	2004
2004	10/11	2,030	4.5	6 -8	5.3	2005
2005	10/16	2,030	4.5	6 -8	6.8	2006
2006	10/15	2,025	4.5	6-9	1.0	2007
Average #/hr					3.4	
Crooked (802 ac)						
2001	9/25	7,860	9.8	7.6	16.5	2002
2002	9/27	8,080	10.1	6.9	9.5	2003
2003	10/03	7,881	9.8	6.8	7.0	2004
2004	10/06	8,020	10.0	6.5	15.9	2005
2005	10/04	8,020	10.0	6.5	7.4	2006
2006	9/28	8,070	10.1	6.9	12.9	2007
Average #/hr					11.5	
Pretty Lake (184 ac)						
2007	10/07	2,280	12.4	8.9	30.7	2008
Simonton (299 ac)						
2000	10/24	2,000	6.7	5 - 8	8.5	2001
2001	10/11	2,000	6.7	5 - 8	3.2	2002
2002	10/01	2,200	7.4	5 - 8	5.7	2003
2003	10/21	2,000	6.7	5 - 8	2.4	2004
2004	10/11	2,000	6.7	5 - 8	8.1	2005
2005	10/10	1,500	5.0	5 - 8	9.4	2006
2006	10/4	1,220	4.1	6-8	2.1	2007
Average #/hr					5.6	

Appendix 1 cont.

Sylvan (669 ac)						
2001	9/25 & 10/03	12,620	18.9	6.3	24.3	2002
2002	10/10 & 10/16	13,380	20.0	6.0	13.7	2003
2003	10/08 & 10/24	13,200	19.3	6.0	14.3	2004
2004	10/08 & 10/12	13,380	20.0	7.2	16.1	2005
2005	10/06 & 10/11	13,380	20.0	6.8	34.9	2006
2006	9/29 & 10/3	13,380	20	6.7	27.0	2007
Average #/hr					22.0	
Wall (141 ac)						
2005	10/11	1,400	10	5-7	34.0	2006
2006	10/3	1,400	10	5-8	6.7	2007
2007	10/17	1,400	10	6-8	4.7	2008
Average #/hr					15.1	
Winona (562 ac)						
2001	9/27	10,740	19.1	6.6	9.9	2002
2002	10/02 & 10/16	11,240	20.0	6.3	15.7	2003
2003	10/01 & 10/03	11,300	20.1	7.5	25.4	2004
2004	10/01 & 10/12	11,240	20.0	6.4	1.8	2005
2005	10/07 & 10/11	11,240	20.0	7.3	4.6	2006
2006	9/26 & 10/3	11,240	20	7.0	12.0	2007
Average #/hr					11.6	